

## A New Species of *Psilalcis* Warren, 1893 from the East Asia (Lepidoptera, Geometridae, Ennominae)

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**Abstract** A new species of the Ennominae, *Psilalcis keytiparki* sp. n., distributed in Korea, the southern part of Russian Far East and in Central China, is described; its systematic position is discussed.

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**Key words** Lepidoptera, Geometridae, Ennominae, taxonomy, new species, Korea, Russia, China

### INTRODUCTION

A small series of a remarkable geometrid species belonging to the *Heterarmia* -subgroup (sensu Sato, 1984) of the Ennominae was found recently by the first author in the entomological collections of both, the Center for Insect Systematics (CIS), Chuncheon, and the National Institute of Agricultural Sciences and Technology (NIAST), Suwon, Korea. He first supposed that it might be identified as *H. montanaria* (Leech, 1897) (Fig. 6), a West Chinese species which Sterneck (1931: 90) once recorded from Korea, but the specimens examined were distinctly different from the original descriptions and figures of *montanaria* and those of subsequent authors (Prout, 1915; Wehrli, 1943). The second author later was able to confirm that it was neither identical with *montanaria* nor with any of the other described Chinese taxa. Furthermore, some additional specimens of this apparently new species could be traced among undescribed species of *Heterarmia* Warren in the Höne collection (ZFMK). *H. montanaria* almost certainly is not a member of the Korean fauna as it is not represented in the collections mentioned above and records in the faunistic literature (Inoue, 1946; Shin, 1983, 1994, 1996) were based on Sterneck's record and the misidentification of the present new species. Sterneck probably had a mislabelled specimen from Sichuan at hand, as *H. montanaria* and the new species can hardly be confused (Fig. 6). Based on the abovementioned considerations, *H. montanaria* should be omitted from the Korean fauna.

The systematic position of the species here described is disputable. By the external appearances and the general shape of the male and female genitalia it agrees with the species currently included in the genus *Heterarmia* Warren, 1895 (Sato, 1981, 1984; Inoue, 1982). On the other hand, especially in

comparison with *Heterarmia buettneri* (Hedemann, 1881), the type species of *Heterarmia* Warren, the new species has several characters which are also present in a number of species of the genus *Psilalcis* Warren (sensu Holloway, 1993[4]; Sato, 1984, 1994): uncus dorsally with a longitudinal crest-like expansion, tegumen with a posterior process protruding deeply into the base of the uncus, dorsal lobes of hemi-transtilla triangular, apex of sacculus spined (however, the arrangement of many small but stout spines on a rounded plate in the new species is unique). With these points in mind it was not possible to assign the new species to any of the known species-groups presently included in the genus *Psilalcis*. Nevertheless, based on the probable synapomorphies enumerated above it seems better to place it into *Psilalcis* rather than into *Heterarmia*. The new species in a way links typical *Psilalcis* with typical *Heterarmia* species and this may be a further indication for synonymizing them, as already proposed by Holloway, 1993[4]: 234. However, a decision on this point should be based upon a thorough revision of the whole group, recognizing the large number of still undescribed taxa from China.

The following abbreviations are used for the institutions where type specimens of the present new species are kept: CIS: Center for Insect Systematics, Chunchon, Republic of Korea; NIAST: National Institute of Agricultural Sciences and Technology, Suwon, Republic of Korea; ZFMK: Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn, Federal Republic of Germany.

## SYSTEMATIC ACCOUNT

### *Psilalcis keytiparki* sp. n.

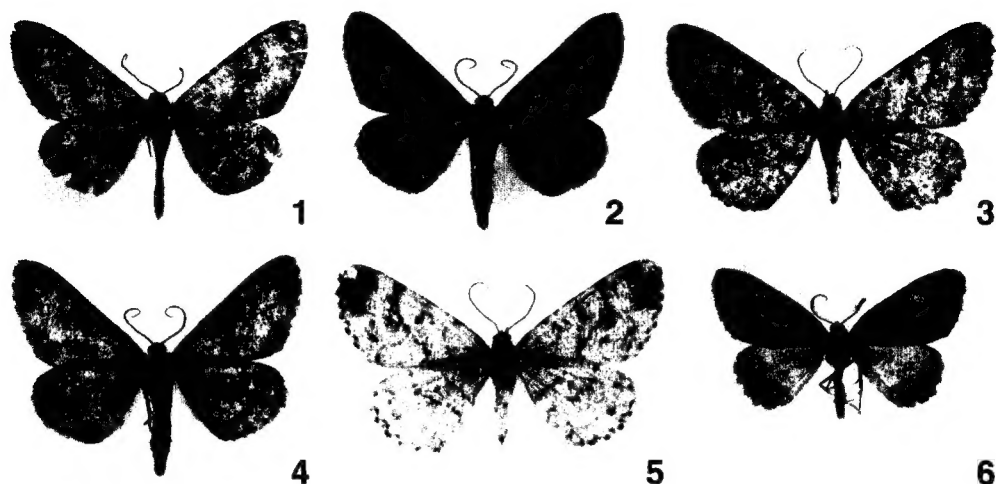
(Figs 1–5, 7–10)

*Boarmia montanaria*: Sterneck, 1931: 90; Inoue, 1946: 48 (nec Leech, 1897).

*Hypomecis montanaria*: Shin, 1983: 1001; Shin, 1994: 310; Shin, 1996: 97.

*Type material*. Holotype, male, [N. China] "Mien-shan (Prov. Shansi) [=Shanxi], Obere Hne ca. 2,000 m, 1 VII 1937, H. Hne" (ZFMK). Paratypes: 2 ♀, locality and data as holotype; 1 ♀, same locality and collector, 2 VII 1937; 1 ♂, id., 3 VII 1937; 1 ♀, id., 14 VII 1937; 1 ♂, F.E. Russia, Primorye [Primorskii krai], W. Khanka Lake, [Pogranichnyi distr.] vic. Barabash Levada, 20 IV– 1 VII 1994, Danchenko (ZFMK). KOREA: Prov. Gangweon-do: 1 ♂, Mt. Samak, 13 VI 1990 (K.T. Park); 2 ♂; Mahari, Pyeongchang, 6 VI 1996 (J.S. Lee); 2 ♂, Mt. Chiak, 23 VI 1977 (K.R. Choe); Prov. Gyeonggi-do: 1 ♂, Gwangleung, 10 VI 1980 (K.J. Won); 1 ♂, Gwangleung, 2 VI 1985 (K.J. Won) in the CIS and NIAST.

*Description*. Length of forewing 19–22 mm (male), 20–22 mm (female). Male antenna fasciculate, but each joint with a characteristic ventral thickening with tufts of long ciliae and a pair of stronger bristles. Forewing with ground colour a light brownish grey, heavily striated and dusted with blackish brown scales. Postmedial blackish line most conspicuous, slightly dentate and marked black on the veins, slightly broadening towards hind margin; submarginal whitish irregular line shaded by a rather broad and also irregular blackish band proximally; medial line most distinct near costa and hindmargin, closely approaching the postmedial between veins CuA<sub>2</sub> and 2A; antemedial line curved and waved outwardly;

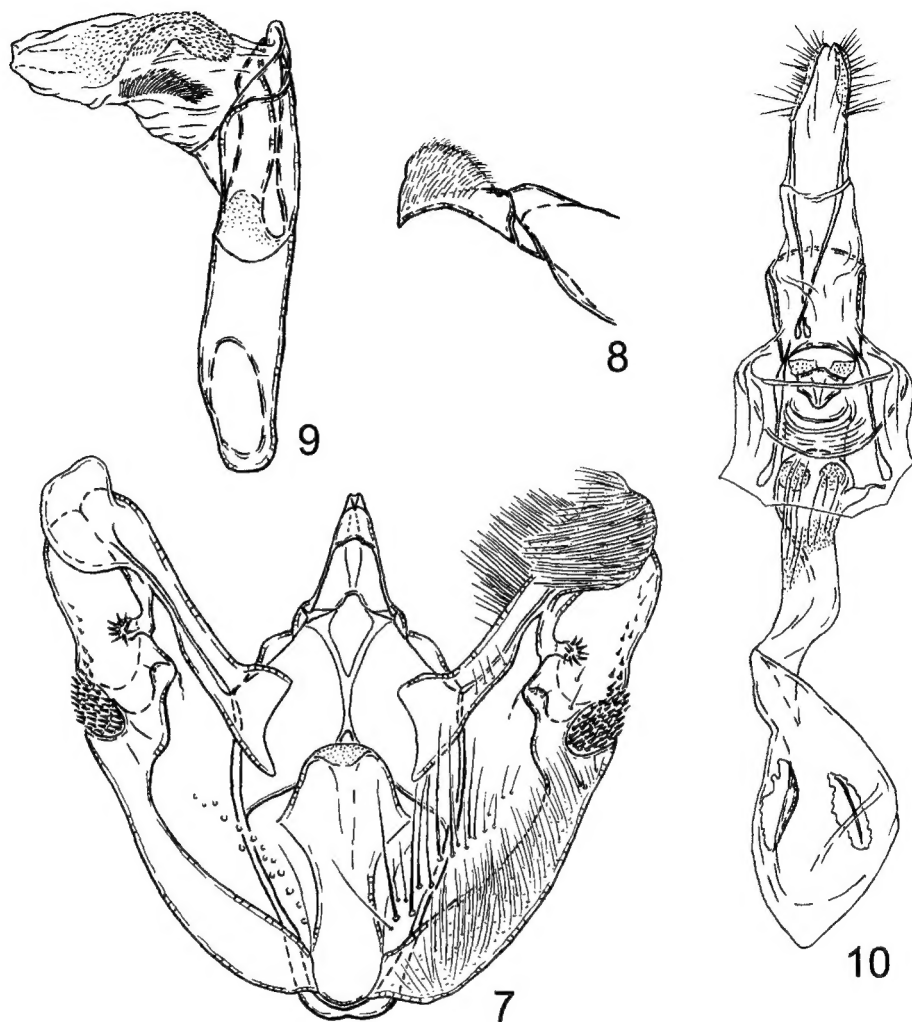


**Figs 1-6.** 1-5. *Psilalcis keytiparki* sp. n., adults: 1. holotype; 2. ♂, paratype, Barabash-Levada; 3. ♀, paratype, Mien-shan; 4. ♂, paratype, Barabash-Levada, underside; 5. ♀, paratype, Mien-shan, underside; 6. *Heterarmia montanaria* (Leech) adults. ♂, syntype, Omei-shan, Sichuan, China.

discoïdal spots present, black, placed on medial line in the forewing; fringe brownish-grey, margin with black lunules between the veins. Hindwing very similar to forewing in pattern and coloration, but antemedial line lacking, medial indistinct line proximal of discoïdal spot. Underside much lighter, dark striation reduced, transverse lines as above but more strongly contrasting, apical area of the forewing blackish, surrounding a whitish apical spot. Discal spots as on upper side, those of the forewing not connected to costa. Fovea in male weakly developed. Venation:  $R_1$  and  $R_2$  free or short stalked,  $R_1$  touches Sc or shortly anastomosed with it,  $R_2$  with a short cross-bar connected to the common stalk of  $R_{3+4}$ ;  $R_{3-5}$  always arising from the same point with  $M_1$ . Hind-tibia slightly dilated, without hair-pencil, setal comb on third abdominal sternite absent, sterno-tympanal process as well. Tympanal organ without lacinia.

Male genitalia (Figs 7-9). Tegumen posteriorly with a distinct, rounded extension, protruding into the base of the uncus. Uncus dorsally expanded, laterally flattened, forming a longitudinal, densely setose crest, with apex acute, pointing ventrad. Gnathos vestigial, with remnants of the lateral arms on each side of the base of the uncus. Valva wide, with large, slightly tetrangular cucullus, the latter densely covered with fine setae; ampulla small, club-shaped, with 9-10 strong spines apically; sclerotized band between ampulla and sacculus with a small, pillow-shaped, slightly setose "harpe"; sacculus terminating with a roundish, slightly protruding plate which is densely covered with short spines. Juxta with rounded apex. Aedeagus apically with a deep unsclerotized incision, separating sclerotized longitudinal bands. Vesica with a large, retroflexed diverticle evenly covered with minute teeth and a small, elongate sclerotized plate with short, rather stout deciduous spines.

Female genitalia (Fig. 10). Sterigma consisting of a postvaginal plate only (lamella antevaginalis membranous), strongly sclerotized and rather quadrate at its posterior part, with a pair of small plates at



**Figs 7-10.** *Psilalcis keytiparki* sp. n., genitalia: 7. ♂, paratype, Gwangleung; 8. uncus, lateral view; 9. aedeagus; 10. female, paratype, Mien-shan, China.

its posterior corners. Ostial funnel enlarged, not sclerotized; anterior somewhat wrinkled part overlapping with the ductus bursae. Ductus bursae wide, moderately sclerotized and fluted proximally, narrowing and becoming membranous towards corpus bursae. Corpus bursae also membranous, rather small, oval, with two large, slit-like signa, arising from opposite sides of the bursa. Papillae anales weak, rounded.

**Variation.** Specimens from Korea are on an average darker, but with the whitish submarginal line still conspicuous. The single male from Ussuri is very dark, almost melanic, the submarginal line being very faint. This specimen has the underside of wings also much darker.

**Biological notes.** In the Ussuri region *Heterarmia parki* is found in the low mountain forest-steppe area with *Quercus mongolica* and *Pinus densiflora*; and in the Korean peninsula it distributed in pine-

deciduous forests in the lower mountain belt.

*Geographical range.* South of Russian Far East (West of Primorskii krai), Korea (central part), China (Shanxi).

*Etymology.* The authors take pleasure in dedicating this species to the well-known Korean lepidopterologist Prof. Kyu-Tek Park, executive director of the Center for Insect Systematics, Korea.

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